IR Workflow for Suspected/COVID+ Cases

Contents:

1. Follow initial workflow algorithm
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Updated 04/27/2020
IR Procedural Algorithm for COVID-19

Case booked*

COVID-19 status

Suspected

Is it safe to wait for COVID-19 test results??

Yes

Test for COVID-19

No

Proceed to workflow for suspected/positive COVID-19*

Code STROKE (see modified workflow)

Is patient already intubated?

Yes

Follow workflow/SOP for Intubated patient

No

Follow workflow/SOP for UnINTubated patient

Known

Is the test positive?

Yes

No

Proceed with new standard PPE***

*Front desk staff must make direct phone contact with patient care team to verify screen status before putting patient on call
**Consult Highly Infectious Disease P# 33860. A confirmatory test may be required after 24h of first negative test.
***Follow new PPE recommendations for aerosolizing procedures

All patients with suspected/confirmed COVID requiring a general anesthetic for an IR procedure should be intubated inside the IR suite or within a designated intubation room. (East: GI3, West OR17)

IR procedural workflow_V6.0. Updated: 04/27/2020
Pre-procedure Huddle & Room Preparation

- Team members designated to be in the IR suite should huddle once the case has a scheduled start time (in person or virtually):
  - Designated Team leader
  - Anesthesia provider assigned for case
  - Anesthesia runner
  - IR Attending & Fellow
  - IR Nurse
  - Interventional tech & anesthesia tech
  - Outside door runner
- Designated safety officer to prevent any entry without PPE, particular attention to flow of traffic in/out of control room

For specific concerns/advice: (optional huddle attendance)
- Anesthesia COVID Admin on Call EAST (pg 36502)
- Anesthesia COVID Admin on Call WEST (pg 36503)

Print and display signage outside all doors to the designated procedure room (STOP and PPE posters)

Procedure prep:
- Cover anesthesia machine and Omnimed
- Ensure additional HMEF on expiratory limb of anesthesia circuit
- Prepare required airway equipment onto a designated cart, including an HME filter, Ambu bag, PEEP valve & Kelly clamp for case of disconnection, extubation or ventilatory failure
- Ensure HEPA filter is turned ON, prior to arrival

Start of Case & Induction of Anesthesia

Perform check-in procedure room with following all team members present wearing appropriate PPE & lead (if applicable)
- Ensure patient is wearing a surgical mask on arrival
- All procedural team members may be present in the room when the patient arrives
- Apply supplemental O2 via facemask over surgical mask, if required, avoid naso cannula

Procedure prep:
- Procedure staff to physically verify & confirm the setup for case
- Confirm supplies/drugs required outside the room
- End of case sign out, as usual
- Call ICU to notify of case finish
- Patient may be moved to designated room
- Follow transfer protocol for intubated patient
- Transfer ventilation: Ambu bag + PEEP valve + HME Filter
- Ensure deep muscle relaxation and propofol sedation
- Staff not involved with extubation may doff PPE & exit
- Primary anesthesiologist performs extubation, per SOP for extubation of COVID+/PUI patient

End of Case

- Team leader confirms the return pathway, choosing one of the options below
  - Option 1 (Extubate & recover in designated room)
  - Option 2 (patient remains intubated; transfer to ICU)
  - Patient is moved to designated recovery room
- Patient PPE must be maintained for the transfer
- Place an O2 mask over the surgical mask

Post-procedure Care
- Anesthesia staff to remain with PACU nurse until RN is comfortable with patient status
- When appropriate, anesthesia staff doffs and leaves room
- PACU nurse manages care until patient is ready for transfer back to ICU bed
- When appropriate, patient is moved to hospital room or discharged
- Contact EVS (Pg: 92746 East, 92745 West) to inform end of recovery care

End of Case – Decontamination

- Refer to Room Turnover for suspected or confirmed COVID-19 for both IR suite and designated recovery area

IRMrc Protocol:

**PPE for staff involved with care in the procedure room

- All staff entering room
  - N95 respirator + eye protection + gown + head covers + double gloves +/- leg covers

Out of the procedure room

Anesthesia and nurse runner
- Surgical mask + eye protection + gloves

On transfer to designated extubation room

- Team leader
  - Surgical mask + eye protection + gloves
- All transfer staff except team leader
  - N95 respirator + eye protection + gown + head covers + double gloves +/- leg covers

Patient
- Surgical facemask

Location of Donning

- In clean area near in or procedure suite

Doffing

- Ensure a buddy is present to observe doffing

Ensure correct PPE is worn by all members**
**Pre-procedure Huddle & Room Preparation**

- Designated Team leader
- Anesthesia provider assigned for case
- Anesthesia runner
- IR Attending & Fellow
- IR Nurse
- Interventional tech & anesthesia tech
- Outside door runner
- Designated safety officer to prevent any entry without PPE, particular attention to flow of traffic in/out of control room
- Designated Anesthesia Airway team member (optional)
- Anesthesia COVID Admin on Call EAST (pg 36502)
- Anesthesia COVID Admin on Call WEST (pg 36503)
- Print and display signage outside all doors to the designated procedure room (STOp and PPE posters)

**Anesthesia prep:**
- Report ICU attending discussion and ventilation management plan
- Confirm if Procedure Room is ready as below:
  - Cover anesthesia machine and Omnicult
  - Ensure additional HMEF on expiratory limb of anesthesia circuit
  - Prepare required airway equipment onto a designated cart, including an HME filter, Ambu bag, PEEP valve & Kelly clamp in case of disconnection, extubation or ventilatory failure
  - Prepare required drugs onto a second cart inside the room
  - Confirm which supplies/drugs may be required outside the room

**Procedure prep:**
- Procedure staff physically verify & confirm the setup for case
- Confirm supplies required inside the room
- Confirm supplies that may be required outside the room

**Preoperative Consent, H&P**
- Confirm if Procedure Room is ready as below:
  - Confirm supplies required
  - Confirm supplies that may be required outside the room

**Procedure:**
- Confirm if Procedure Room is ready as below:
  - Confirm supplies required
  - Confirm supplies that may be required outside the room

**Procedure prep:**
- Prepare routine transport equipment, including:
  - HMEF, Ambu bag with PEEP valve & Kelly clamp
- Confirm transfer team members and roles mandatory/optional:
  - Team leader (will call/hold elevators/wipe down)
  - Anesthesiologist (head of bed)
  - IR attending or fellow (end of bed)
  - Extra member (ICU or circulating RN, depending extra equipment & staffing)
  - If RT required, please see addendum
- Confirm route & ensure it is clear of all moveable obstacles

**Contact:**
- ICP (Pg: 94277) to clarify COVID status & start/stop time for HEPA filter
- Contact EVS (Pgs: 92746 East, 92745 West) to inform case start

**Ensure correct PPE is worn by all members**

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**Transfer**

- Pre-transfer huddle inside patient room with transfer team
- Direct transfer into procedure room
- Confirm supplies required inside the room
- Confirm supplies that may be required outside the room
- Transport monitor – use monitoring brick from patient room
- Continue current infusions, per clinical indication
- Emergency and intubation drugs, per clinical indication
- Optimize sedation to prevent awareness
- Deep muscle relaxation recommended
- Move to transport ventilation (perform planned circuit disconnection)
  - Turn OFF ICU ventilator (RT to perform this step)
  - Clamp ETT using Kelly clamp
  - Disconnect ETT from ICU circuit
  - Connect Ambu bag + HMEF filter + PEEP valve onto ETT
  - Remove clamp
  - Confirm ventilation as per usual

**Start of the Case**

- Stabilize patient in IR
- Connect patient to anesthesia ventilator (planned circuit disconnect as above)
- Maintain anesthesia using a volatile agent to conserve supplies of total intravenous anesthesia, where possible
- Perform check-in inside procedure room with following team members present wearing appropriate PPE** & lead (if applicable):
  - Anesthesia provider
  - IR attending / fellow
  - Interventional technician
  - IR nurse

**Transfer patient to procedural table**
- Avoid disconnecting ETT from circuit
- In room team strips linens off bed & pushed bed into hallway
- IR attendants decontaminate patient bed surfaces immediately in hallway

**Interventional Procedure**

- Procedural time-out, as usual
- Designated safety officer and runner stay outside during case
- Communication during case:
  - In room team uses hospital phone/intercom to contact outside support
  - Handing in supplies or drugs
  - Place onto designated cart immediately outside procedure room
  - Inside nurse opens procedure room door & collects supplies or drugs

**End of Case**

- Confirm members and roles for subsequent care
- End of case sign out, as usual
- Move patient from procedure table onto ICU bed
- Patient is moved to ICU, with transfer team
- Staff not on transfer may don PPE and exit procedure room
- Contact EVS (Pgs: 92746 East, 92745 West) to inform end of case

**End of Case – Decontamination**

- Refer to Room Turnover for suspected or confirmed COVID-19

**PPE for staff involved with care**

**In the procedure room**
- All staff entering room
  - N95 respirator + eye protection + gown + head covers + double gloves
  - +/- leg covers

**Out of the procedure room**
- Anesthesia and nurse runner
  - Surgical mask + eye protection + gloves
- On transfer to/from ICU
  - All staff except team leader
  - N95 respirator + eye protection + gown + head covers + double gloves
  - +/- leg covers
- Patient
  - Surgical facemask

**Location of Donning**

- In clean area near or in procedure suite

**Doffing**

- Ensure a buddy is present to observe doffing
ICU ventilation & Respiratory therapist

If ICU ventilation is required for the case
- RT will assist with:
  - Any planned circuit disconnections
  - Transfers while on the ICU vent
  - Intubation onto the ICU vent
  - Stabilizing patient inside the OR/procedure
  - Confirming ventilation settings and ensuring anesthesiologist has clear instructions on how to modify vent setting
- RT should be donned in the appropriate PPE
- Maintenance of anesthesia:
  - Avoid the use of the anesthesia machine in OR/procedure room
  - Maintain anesthesia with total intravenous anesthesia

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**Code STROKE**

Pre-procedure huddle ASAP (in person or virtually)
- Confirm ETA of patient
- Confirm plan on arrival into hospital; e.g.: via CT or direct admission into procedure room

Personnel
- Confirm inside staff and outside staff
- Confirm all staff members can adhere to PPE

Room Prep
- Confirm that any inside equipment/supplies that not required are covered with plastic sheets
- Ensure STOP & PPE posters displayed

Confirm Airway Plan
If MAC:
- Supplemental O2 via facemask over surgical mask, avoid nasal cannula
If GA:
- Follow SOP for intubation of COVID-19 patient
- Connect patient to anesthesia ventilator
- Maintain anesthesia using a volatile agent to conserve supplies of total intravenous anesthesia
- Ensure Ambu + HMEF + PEEP valve and Kelly clamp available

Designate safety officer to prevent any entry without PPE, with particular attention to flow of traffic in/out of control room

Remainder of the case can proceed via the INTubated or UNtubated workflows
STOP!!

RESTRICTED ENTRY

SPECIAL FLU DROPLET + CONTACT PRECAUTIONS REQUIRED

Do NOT enter unless necessary

Refer to the PPE checklists BEFORE & AFTER entering the OR
Sequence for Putting On
Personal Protective Equipment (PPE) for Patients on Special Flu Droplet and Contact Precautions

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. RESPIRATORY AND EYE PROTECTION

Routine care:
Mask with Eye Protection

Aerosol-generating procedures:
N95 Respirator with Eye Protection
• Secure elastic bands at middle of head and at neck
• Fit flexible band to nose bridge
• Fit snug to face and below chin
• Ensure respirator fit

-OR-
PAPR

2. GOWN (Blue Gowns)

• Fully cover torso from neck to knees and arms to wrists
• Wrap around the back
• Fasten in back of neck and waist

3. HAND HYGIENE

4. GLOVES

• Extend to cover wrist of isolation gown
• Double glove

Use Safe Work Practices to Protect Yourself and Limit the Spread of Contamination

• Keep hands away from face
• Limit surfaces touched
• Change gloves once torn or heavily contaminated
• Perform hand hygiene

Adapted from CDC Poster: Revised ICHE 2020.03.19. Flu and Norovirus/management/2019-20/PPE
Sequence For Safely Removing

Personal Protective Equipment (PPE) For Patients On Special Flu Droplet And Contact Precautions

Outside surfaces of gloves, gown, sleeves, mask and respirator are contaminated! If your hands become contaminated during PPE removal, immediately wash your hands or use an alcohol-based hand sanitizer.

### 1. GOWN
- Grasp the front of the gown with gloved hands
- Pull the gown away from the body until attachments break
- While removing gown, roll inside out into a bundle, touching only the outside of the gown with gloved hands
- Discard the gown into a waste container

### 2. GLOVES
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container in patient room

### 3. HAND HYGIENE

### 4. MASK WITH EYE PROTECTION
- Grasp bottom ties/mask elastics, followed by ties/elastics at the top
- Remove without touching the front of the mask
- Discard into designated bin if soiled OR implement reuse protocol

### 5. N95 RESPIRATOR or PAPR
- Grasp either bottom ties/mask elastics, followed by ties/elastics at the top
- Remove without touching front of the mask
- Discard into designated bin if soiled OR implement reuse protocol

### 6. HAND HYGIENE

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Adapted from CDC Poster: Revised I Che 2020.03.19. Flu and Norovirus/management/2019-20/PPE
Room Turnover for Suspected or Confirmed COVID 19 Patients

Procedure ends
Patient is transferred to ICU bed per protocol

Prepare for Room turnover: Table Breakdown, compile Instruments, consolidate, contain all trash

Suspected or confirmed COVID 19 pt?

No

Patient leaves OR. Clean as normal.

Yes

Planned Extubation in OR?

No

Patient leaves OR intubated for ICU or designated extubation location

Yes

All staff leave OR EXCEPT Airway Team Member, RT, and Anesthesiologist

Once extubated, PACU staff dons PPE and enters to recover patient

Patient ready for transfer

Patient leaves OR

OR REMAINS EMPTY, DOORS CLOSED FOR 30 MINUTES

OR Attendants & Anes Staff don PPE (regular mask, safety eyewear, gown, gloves)

Attendants enter room with cleaning supplies, canisters, isolizers

OR Attendants remove plastic from covered equipment, remove instruments & trash to corridor

Anes Cleaning: (Attachment 1)

Attendant Cleaning: Two-person Process with 3rd Outside Rm to provide additional supplies (Attachment 2)

Terminal Cleaning by EVS (Attachment 3):

Nursing enters clean OR, repositions equipment

Anes Techs re-cover equipment

OR Attendant makes bed

OR Ready for Next Case
Attachment 1
Anesthesia Cleaning

Covid-19 Suspected and Positive Patient Room Steps
For The Anesthesia Technician and Overnight Resident / Attending’s

After Patient leaves the room and the 30MIN Time has expired

1. Technician / MD Dons PPE (Reg. surgical mask, eye protection, gown, shoe covers, gloves.)
2. (Trash the room) throw away all disposables into trash. Throw away all drapes/covers on machine and from carts in the room from Anesthesia. (Gently remove covers from carts and Anesthesia Machine)
3. Wipe all surfaces including (IV poles, pumps, TOF, SS anesthesia cart and inside drawers of cart, Ranger, Bair Hugger, McGrath, AW Cart all surfaces on the anesthesia machine front, back, tops, and sides. Wipe telephone if mounted to machine.
4. Dispose of trash on instrument cart to be covered by OR Attendants.
5. Dof all PPE and dispose of properly.
6. EVS Terminally cleans room.
7. Return to room Re-stock and set up room with drapes/covers.
Attachment 2
Attendant Cleaning

Two Person Turnover

PERSON ONE

PREPARE
- Wash hands; don PPE

CONTAIN
- Trash
- Biohazard Trash
- Linen
- Sharps

WIPE DOWN
- Wipe down trash and linen receptacles

MANAGE FLUIDS
- Remove suction; add solidifier; replace caps securely

FLOOR CLEANING
- Remove suture and string
- Remove furniture; mop thoroughly
- Dispose of mop head properly

FINISH
- Push case cart to decontam
- Remove PPE and wash hands
- Return equipment to storage area

PERSON TWO

PREPARE
- Wash hands; don PPE
- Remove blood cooler; wipe down and alert desk

CLEAN
- Overhead lights
- OR bed tables and attachments
- Ring stands
- Mobile equipment as needed
- Boot machines
- IV poles
- Kick buckets
- Sitting stools
- Step stools
- Computers monitors, keyboards, telephones
- Viewing monitors

FINISH
- Remove PPE & wash hands
- Make bed with trash linen

NOTE
Third Person outside of room to provide additional supply needs
## Terminal Cleaning

1. Perform hand hygiene and don Personal Protective Equipment (PPE)
2. Dust and disinfect X-ray view box
3. Wipe, disinfect suction regular system
4. Wipe, disinfect HVAC vents (exterior)
5. Empty trash containers disinfect (in & out) and replace liners
6. Empty and disinfect kick buckets and rolling stands (in & out)
7. Empty and disinfect linen hampers (replace liners)
8. Wipe and disinfect rolling chairs and rolling stools
9. Wipe and disinfect overhead light and arms
10. Wipe and disinfect step on stool
11. Wipe and disinfect Mayo stands
12. Break down and thoroughly wipe and disinfect OR table (base)
13. Wipe and disinfect IV poles
14. Wipe and disinfect countertop and computer monitor and keyboard at workstation
15. Wipe and disinfect supply cabinet (exterior)
16. Spot cleaning of walls and ceilings
17. Viewing monitors
18. Light switches, door handles, push plates, and telephones
19. Thoroughly wet mop entire floor surface using microfiber mop
20. Remove iodine stains (floor surface)
21. Clean and disinfect sinks and faucets
**Preparation**

- Designate team leader and confirm:
  - Patient ID
  - Allergies
  - Weight
  - Can the patient be optimized any further?
    - Fluids/vasoressors
    - NGT aspiration

- Prepare for an unanticipated difficult airway*
  - Is there a clinical indication/need for fibreoptic intubation?
  - Call for disposable Ambu fiberoptic scope
  - Discuss need for additional expertise
  - Confirm primary & backup plan for difficult airway

- Reduce exposure
  - Limit staff member in room during intubation (max 3)
  - 1st intubator (Anesthesiologist or Airway Team Member)
  - 2nd intubator (if required)
  - RN
  - Runner (outside the room)

**Anesthesia prep:**
- Check equipment:
  - Facemask + Ambu bag + HME filter
  - Oropharyngeal airway
  - Yankauer Suction
  - VL: McGrath
  - Bougie
  - ETT x 2
  - ETCO2 confirmatory method
- Prepare required drugs which will be brought inside the room
  - Induction agents
  - Emergency (hemodynamic support)
  - Maintenance (sedation, hemodynamic support)
- Confirm which supplies & drugs will remain outside the room
- Prepare how you will dispose of used items (2x bags: clean and dirty contaminated bags)

Apply PPE**
- Remove personal items (pens, mobile phones, ID badges)
- Buddy/mirror check
- Confirm plan with all members
- How will we call for help, if needed?

**Anesthesia Induction**

- **Prepare**
  - Apply standard ASA monitors
  - Check for working IV access
  - Ensure HME filter is between facemask & circuit/Ambu bag

- **Preoxygenate**
  - Optimize position
  - 5min or until target ETO2 reached (as defined by airway team)

- **Perform RSI**
  - Rapid administration of induction drugs and flush
  - IF difficulty intubating, follow difficult airway plan below
  - Connect ETT to anesthesia circuit
  - Inflate cuff BEFORE applying PPV
  - Confirm intubation via ETCO2 (avoid auscultation)
  - Secure ETT

*Difficult Airway Plan*

- Option 1: McGrath VL (preferred 1st line)
- Option 2: iGel + small tidal volume ventilation
- Option 3: Ambu fiberoptic scope
- Option 4: mask ventilation +/- surgical airway

If bag-mask ventilation is required, use small volumes
- In the event of an anesthesia stat call
  - The outside staff member (circulator/runner) must prevent any entry without appropriate PPE

**Post-intubation**

- Place laryngoscope (handle & blade) into biohazard bag and seal
- Place facemask into biohazard bag and seal
- Ensure HME filter is between ETT and circuit
- Clamp ETT if disconnection of circuit is required

**Extubation**

- Perform routine extubation planning
- Ensure full NMB recovery
- Antiemetics recommended
- Extubation sequence:
  - Consider using a blue chuck or towel to cover the patient’s mouth during extubation (as a barrier for aerosolization)
  - Retain HMEF on ETT during extubation
  - Deflate ETT and extubate along with the towel/chuck
  - Dispose of used disposable supplies (ETT, temp probe, bite block, OPA, NG/OG tube, suction) using the dirty contaminated bag
  - Do NOT throw away laryngoscopes, keep in sealed specimen bag in OR for anesthesia technician collection

**PPE for staff involved with care**

**In the OR/ICU room**

- 1st intubator
  - PAPR or N95 + eye protection + gown + head cover + double gloves +/- shoe/leg covers
- 2nd intubator or Anesthesia stat responder
  - PAPR or N95 + eye protection + gown + head covers + double gloves +/- shoe/leg covers
- Nursing
  - N95 + eye protection + gown + head covers + double gloves +/- leg covers

**Out of the OR/ICU room**

- Runners (Nursing, Anesthesia)
  - Surgical facemask + eye protection + gown + double gloves

**Doffing**

- Ensure a buddy is present to observe doffing!

**DON’T RUSH!!! YOUR personal protection is THE priority.**